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CLAIMS

(57) [Utility model registration claim]

[Claim 1] Two or more segment magnets which make radii tabular are contained in the tooth space formed of the peripheral face of York made from a magnetic material which fixed on the periphery of a rotor axis, and the side face of the maintenance projection which protrudes on a radial. It is equal or the disk made from the non-magnetic material of an appearance small a little is located, and the appearance of a maintenance projection in a segment magnet and shaft-orientations both the lateral surface of York -- abbreviation -- with the shaft-orientations lateral surface of a disk In the permanent magnet rotator which comes to form the shaping resin layer of thermosetting resin in the clearance between the peripheral face and segment magnet which followed this, and a maintenance projection, and the through tube which York and a disk open for free passage The permanent magnet rotator characterized by preparing two or more insertion holes which a metal mold projected part advances into the location which does not lap with the through tube of a disk and laps with a segment magnet and the end face of York, carry out location regulation of a segment magnet to said disk and a shaping resin layer, and are open for free passage in a shaping resin layer from a disk.

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DETAILED DESCRIPTION

[Detailed explanation of a design]

[Industrial Application]

A rotator is used for the introvert mold brushless electric motor by which an enclosure is carried out to a stator, and this design is related with the permanent magnet rotator which has a segment magnet.

[Description of the Prior Art]

The permanent magnet rotator used for an introvert mold brushless electric motor makes a permanent magnet part cylindrical, and he is trying for a unlike pole to appear by turns in the peripheral face. In order to increase the magnetism of this permanent magnet, the segment magnet which divided the cylinder for every pole is used from the constraint on processes, such as magnetic field shaping and a baking process.

The permanent magnet rotator using this segment magnet has the common configuration shown in Fig. 4 . That is, press fit fixing of cylinder-like York B made from a magnetic material was carried out, and the segment magnet C1 thru/or C4 have pasted the rotor axis A at the periphery of York B made from a magnetic material.

If the rotator of such a configuration is the rotational frequency of thousands rpm about, although it can respond, when it becomes a rotational frequency beyond it, maintenance of a segment magnet becomes impossible.

from the thing of the high speed at which a miniaturization and a high increase in power are needed, and, as for a brushless electric motor, the rotational speed of a rotator also exceeds 10,000rpm in recent years -- further -- the ultra high-speed thing also exceeding 20,000rpm is required, and a motor also becomes an elevated temperature in connection with this.

Then, even if an applicant for this patent does high-speed rotation, in order to be able to perform maintenance of a segment magnet, he proposed what is shown in Fig. 5 in Japanese Patent Application No. 01-71010. The peripheral face of York B made from a magnetic material which fixed two or more segment magnets C1 with which this thing makes radii tabular thru/or C4 on the periphery of a rotor axis A, It holds in the tooth space formed of the side face of the maintenance projection B1 which protrudes on a radial thru/or B4. and the outer diameter of a maintenance projection in a segment magnet and shaft-orientations both the lateral surface of York -- abbreviation -- by being equal or locating the disks D and D made from the non-magnetic material of an outer diameter small a little The shaping resin layer E of thermosetting resin is formed in the clearance between the peripheral face and segment magnet which performed resin shaping where location regulation of the direction of a segment magnetic axis is carried out, consequently followed the shaft-orientations lateral surface of Disk D, and this, and a maintenance projection. in addition -- York B made from a magnetic material -- the through tube Bd of plurality (this example four pieces) -- moreover, the through tube Dd corresponding to it to Disk D -- respectively -- preparing -- **** -- these holes -- the shaping resin layer E described above also inside is formed continuously.

[Problem(s) to be Solved by the Device]

The above-mentioned permanent magnet rotator carries out resin shaping with shaping metal mold as shown in Fig. 6 . In drawing, it is the upper metal mold with which L has the Shimokane

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mold and U has Gate G. The melting resin poured in from Gate G separates with the flow y1 which passes along the through tubes Dd and Bd prepared in Disk D and York B, respectively, and the flow y2 passing through the clearance between metal mold L and U and a segment magnet, and flows further, and y2 flows also in the clearance between a segment magnet and a maintenance projection. And finally it is filled up with these and the shaping resin layer E is formed. Each segment magnet will be pushed against the peripheral face Ba of York by the pressure of the resin at the time of this shaping, and will be located in a request location with sufficient balance.

By the way, Disk D is ****(ed) using thermoplastics (for example, polyamide resin containing a glass fiber etc.) in many cases for simplification of manufacture. And Disk D will catch directly the melting resin poured in from Gate G as it is also at necessary compacting pressure, in order to form the shaping resin layer E. At this time, before melting resin solidifies, Disk D may deform, in that case, location regulation of the direction of a segment magnetic axis becomes impossible, and it will shift to shaft orientations.

This design is what was made in view of this reason, and the place made into the purpose is in a resin forming cycle to offer the permanent magnet rotator to which location regulation of the direction of a segment magnetic axis may be ensured.

[The means for solving a technical problem]

In order to solve this technical problem, the permanent magnet rotator of this design A rotor axis, a segment magnet, York made from a magnetic material, and the disk made from a non-magnetic material, The clearance between the shaft-orientations lateral surface of a disk, and the peripheral face and segment magnet which followed this, and the maintenance projection of York, It is the thing which comes to form the shaping resin layer of thermosetting resin in the through tube which York and a disk open for free passage. It is made the configuration which prepared two or more insertion holes which a metal mold projected part advances into the location which does not lap with the through tube of a disk and laps with a segment magnet and the end face of York, carry out location regulation of a segment magnet to said disk and a shaping resin layer, and are open for free passage in a shaping resin layer from a disk.

[Function]

According to this design, since two or more insertion holes for a metal mold projected part were formed in the disk, as the metal mold projected part which contacts shaping metal mold at a segment magnet and the end face of York is prepared and location regulation of the direction of a segment magnetic axis is carried out by this, resin shaping can be performed to it.

Consequently, two or more insertion holes which are open for free passage to the insertion hole of a disk can be formed also in a shaping resin layer, and this insertion hole can be used now for it as the attachment section of a balancing member.

[Example]

Hereafter, one example of this design is explained based on Figs. 1 thru/or 3 .

This permanent magnet rotator 1 consists of disks 5 and 5 of segment magnet 4a of a rotor axis 2, York 3, and plurality (this example four pieces) thru/or 4d, and the product made from a non-magnetic material, and a shaping resin layer 6 of thermosetting resin.

Coming to carry out the laminating of Elements 3a and 3a and -- which York 3 pierced a magnetic material like silicon steel, and formed, the shape of a basic form is making the shape of a cylinder. This laminating thickness is taken as the below-mentioned segment magnet 4a thru/or shaft-orientations die length of 4d, and an abbreviation EQC. Furthermore, abbreviation etc. is in that direction thickness of a path by carrying out in a segment magnet and the same number at peripheral face 3b of this York 3, and the maintenance projections 3c and 3c of height and -- are formed successively by the radial. It is broad, applying [these maintenance projections 3c and 3c and] them at a tip from near the middle of the direction height of a path. Therefore, a profile radii-like tooth space is formed of peripheral face 3b and the side face of the maintenance projections 3c and 3c and --. 3d, 3d, and -- are the through tubes for the object for shaping, and shaping resin stratification.

Segment magnet 4a thru/or 4d are a circular plate corresponding to this small a little in order

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to hold in the tooth space in York 3. Therefore, the periphery side of hoop direction both ends serves as a configuration from which the part corresponding to the broad configuration of a maintenance projection was excised.

that by which the disks 5 and 5 made from a non-magnetic material are ****(ed) by resin made from heat plasticity like the polyamide resin containing glass 30% -- it is -- the outer diameter of maintenance projection 3c -- abbreviation -- it is equal or is formed in the profile disc-like of an outer diameter small a little. 5d, 5d, and -- are the through tubes for the object for shaping, and shaping resin stratification, and are prepared in the location corresponding to the through tubes 3d and 3d of York. 5e is a through tube which a rotor axis 2 inserts in. In addition, the configuration of these disks 5 and 5 is explained in full detail behind.

The shaping resin layer 6 fills up with thermosetting resin the maintenance projections 3c and 3c of the shaft-orientations lateral surface of disks 5 and 5, the peripheral face which followed this and segment magnet 4a thru/or 4d, and York, a clearance and the through tubes 3d and 3d of York, -- and the through tubes 5d and 5d of a disk with --, and --, and is formed in them.

Next, the configuration of the disks 5 and 5 made from a non-magnetic material is explained in full detail. From two or more gate locations where these disks 5 and 5 are formed in shaping metal mold, 5g of ridges in which 5f of end faces projects from the shaft-orientations side face of the shaping resin layer 6 is formed in the method of inside, and 5h of circumferential grooves is prepared in 5f of end faces. End-face 5i by the side of the method of outside furthermore based on 5h of circumferential grooves is formed so that pressurization deformation may be carried out by the metal mold side. End-face 5i by the side of the method of outside in this example is made to have projected a little, and after forming cycle completion, pressurization deformation of it is carried out by metal mold, and he is trying to become end-face 5j by the side of the method of inside, and an abbreviation same flat surface from end-face 5j by the side of the method of inside in the state of the components of disks 5 and 5. That is, distance between end-face 5i by the side of the method of outside and 5i is enlarged a little from 5f of end faces of vertical metal mold, and a 5f contact face-to-face dimension.

A still more important point is that the insertion holes 5k and 5k of the plurality (this example eight pieces) for a metal mold projected part advancing into the location which these disks 5 and 5 do not lap with those through tubes 5d and 5d and --, and laps with the end face of segment magnet 4a thru/or 4d, and York 3, and carrying out location regulation of a segment magnet, and -- are formed.

5m is the thin cylinder section, and it protrudes so that it can fit in on the same axle with through tubes 5d and 5d and -- at the through tubes 3d and 3d of York 3, and --. 5m of this thin cylinder section is to carry out thermal expansion by the preheating before resin shaping to perform, and fix a disk 5 to York 3 firmly. It is the excision section which cut 5m of thin cylinder sections, and lacked and formed them, and 5n of deformation by thermal expansion is enlarged more.

A deer is carried out and manufacture of the permanent magnet rotator 1 is performed as follows. First, York 3 is pressed fit in a rotor axis 2. Next, disks 5 and 5 are pressed fit so that segment magnet 4a thru/or 4d may be inserted in York 3 and this may be inserted into shaft-orientations both those lateral surface. Next, after carrying out the preheating of the thing of this condition, Punch U and female mold L are equipped. In addition, it is a location corresponding to the insertion holes 5k and 5k of disks 5 and 5, and --, and from the insertion holes 5k and 5k and the bore of --, it is a minor diameter a little and the projected parts Ut and Lt of die length still more nearly equal to the sum of the thickness of disks 5 and 5 and the shaping resin layer 6 are formed in these vertical molds U and L. Next, Punch U descends and it is compared with female mold L. While pressurization deformation of the end faces 5i and 5i by the side of a way is carried out outside disks 5 and 5 at this time, both the projected parts Ut and Lt contact York 3, segment magnet 4a, or a 4d end face, and perform segment magnet 4a thru/or location regulation of 4d shaft orientations. And thermosetting resin like an unsaturated polyester resin is poured in from the gate G of Punch U, for example.

In this case, the melting resin poured in from Gate G separates with the flow z1 which passes

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along the through tubes 5d and 3d prepared in a disk 5 and York 3, respectively, and the flow z2 passing through the clearance for metal mold L and U, segment magnet 4a, or 4d, and flows further, and Z2 flows also in the clearance between a segment magnet and a maintenance projection. And finally it is filled up with these and the shaping resin layer 6 is formed in the clearance between the shaft-orientations lateral surface of a disk 5, the peripheral face which followed this and a segment magnet, and a maintenance projection. Moreover, when Punch U goes up, the insertion holes 5k and 5k of a disk 5, the insertion holes 6k and 6k which are open for free passage to --, and -- will be formed in the shaping resin layer 6.

Such a disk 5 and the insertion-holes-5k-and-5k-of-the-shaping resin layer 6, --6k, 6k, and -- can be used as the attachment section which attaches a balancing member like putty to make weight balance of the permanent magnet rotator 1 into fitness more.

In addition, although 5f of ridges was formed in the disk 5 and explained by this example, the conventional disc-like thing which does not form this may be used.

[Effect of the Device]

Since the permanent magnet rotator of this design was constituted as mentioned above and can perform resin shaping as it prepares the metal mold projected part which contacts shaping metal mold at a segment magnet and the end face of York and carries out location regulation of the direction of a segment magnetic axis by this, in a resin forming cycle, location regulation of the direction of a segment magnetic axis can perform it certainly.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

Drawing 1 is a perspective view showing one example of this design,

Drawing 2 shows the disk made from the non-magnetic material,

For a top view and (b), the A-A sectional view of (a) and (c) are [(a)] a bottom view,

Drawing 3 is drawing of longitudinal section showing the condition that shaping metal mold was equipped,

Drawing 4 is a perspective view showing a general example,

Drawing 5 is a notching **** perspective view selectively, although the applicant for this patent proposed previously,

Drawing 6 is an explanatory view explaining the shaping condition.

1 [.. A breakthrough, 4a or 4d / .. A segment magnet, 5 / .. The disk made from a non-magnetic material 5d / .. A breakthrough, 5k / .. An insertion hole, 6 / .. A shaping resin layer, 6k / .. An insertion hole, U / .. A punch, Ut / .. A metal mold projected part, L / .. Female mold, Lt / .. Metal mold projected part] A permanent magnet rotator, 2 .. A rotor axis, 3 .. A yoke, 3d

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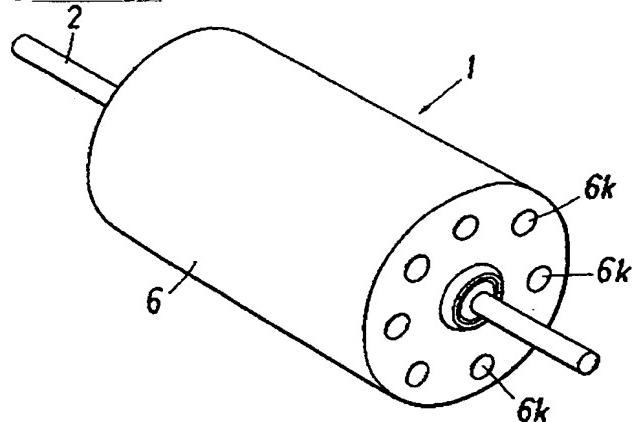
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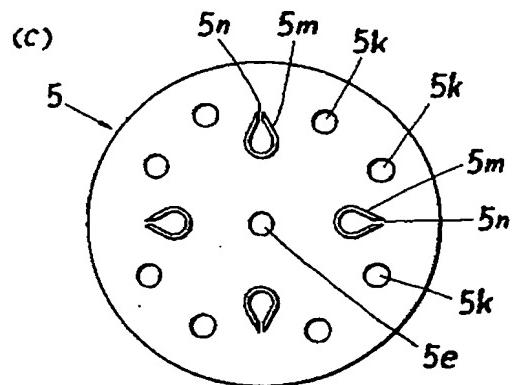
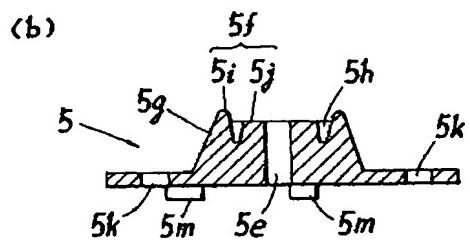
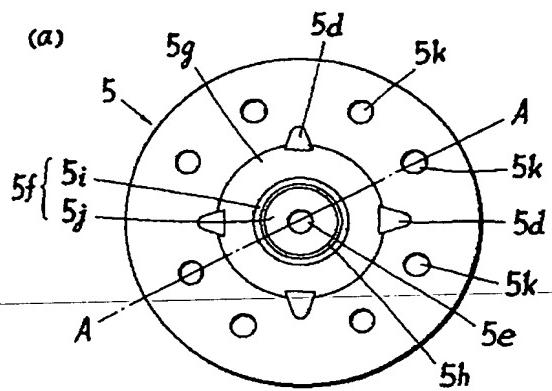
DRAWINGS

[Drawing 1]

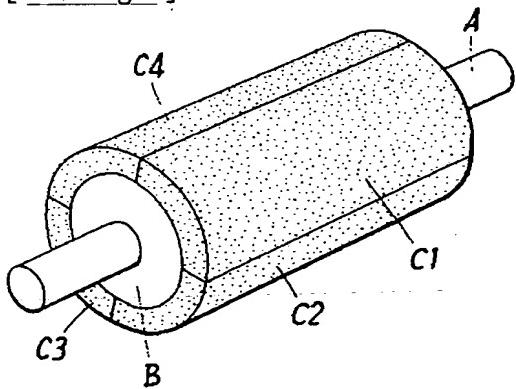


[Drawing 2]

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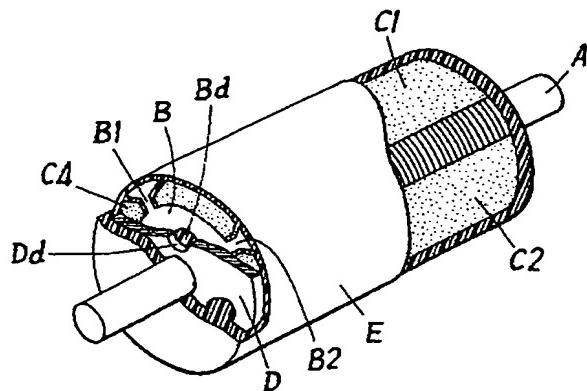


[Drawing 4]

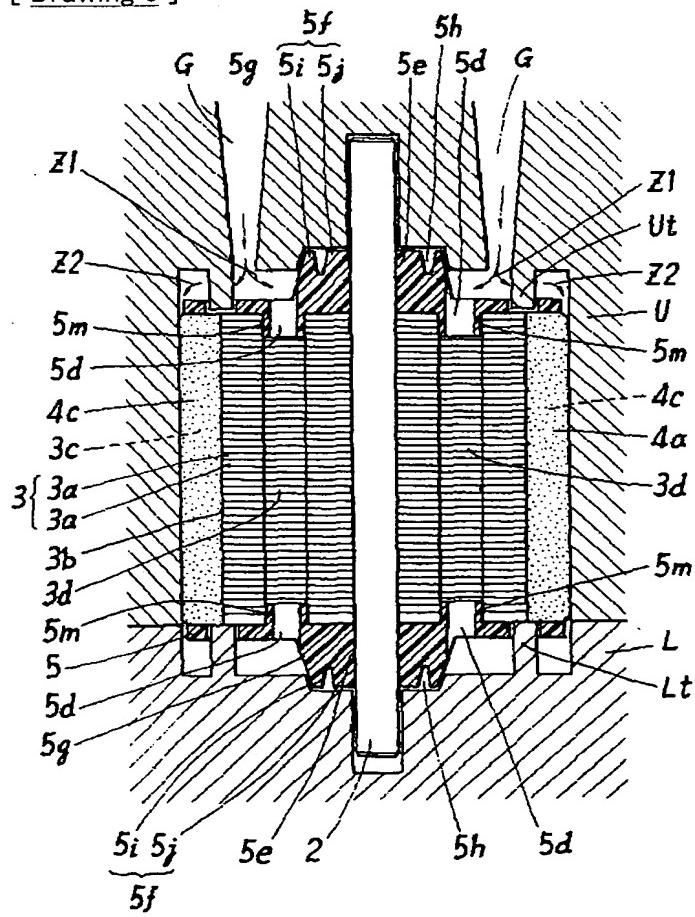


[Drawing 5]

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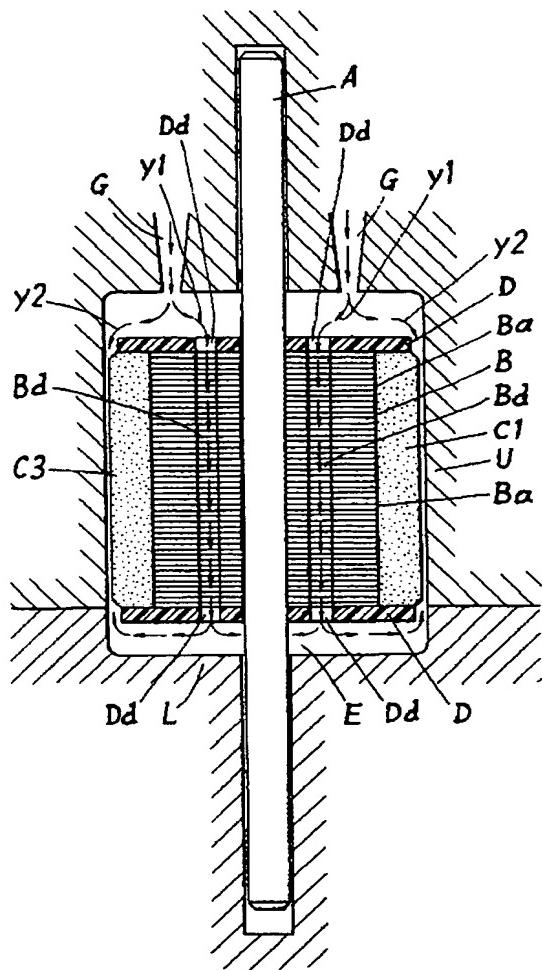


[Drawing 3]



[Drawing 6]

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(19)日本国特許庁 (JP)

(12) 実用新案登録公報 (Y2) (11)実用新案登録番号

第2527656号

(45)発行日 平成9年(1997)3月5日

(24)登録日 平成8年(1996)12月2日

(51)Int.Cl. ⁶ H 02 K 1/27 15/03	識別記号 501	府内整理番号 F I H 02 K 1/27 15/03	技術表示箇所 501D A
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請求項の数1(全5頁)

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	(56)参考文献 実開 昭56-66186 (JP, U) 実開 昭56-66184 (JP, U)

(54)【考案の名称】 永久磁石回転子

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(57)【実用新案登録請求の範囲】

【請求項1】円弧板状をなす複数のセグメント磁石を、回転子軸の外周に固着された磁性材料製のヨークの外周面と放射状に突設される保持突起の側面とにより形成されるスペース内に収納し、しかもセグメント磁石及びヨークの軸方向両外側面に、保持突起の外形に略等しいか若干小さい外形の非磁性材料製の円板を位置させ、円板の軸方向外側面と、これに連続した外周面及びセグメント磁石と保持突起との隙間と、ヨーク及び円板の連通する貫通孔とに、熱硬化性樹脂の成形樹脂層を形成してなる永久磁石回転子において、前記円板及び成形樹脂層に、円板の貫通孔に重ならず、かつセグメント磁石及びヨークの端面に重なる位置に、金型突部が進入してセグメント磁石の位置規制をするものであって円板から成形樹脂層に連通する複数の挿通孔

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を設けたことを特徴とする永久磁石回転子。

【考案の詳細な説明】

【産業上の利用分野】

本考案は、回転子が固定子に外囲される内転型無刷子電動機に用いられるものであって、セグメント磁石を有する永久磁石回転子に関する。

【従来の技術】

内転型無刷子電動機に用いられる永久磁石回転子は、永久磁石部分を円筒状とし、その外周面に異極が交互に現れるようにしている。この永久磁石の磁力を増大させるためには、磁場成形と焼成工程といった製法上の制約から、円筒を極毎に分割したセグメント磁石を用いる。

かかるセグメント磁石を用いた永久磁石回転子は、第4図に示す構成が一般的である。すなわち回転子軸Aに円筒状の磁性材料製ヨークBが圧入固着され、磁性材料

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製ヨークBの外周にセグメント磁石C1乃至C4が接着されている。

このような構成の回転子は、およそ数千rpmの回転数であれば対応できるものの、それ以上の回転数になると、セグメント磁石の保持ができなくなる。

近年、無刷子電動機は小型化・高出力化が必要とされ、回転子の回転速度も10,000rpmを超える高速のものから、さらには20,000rpmをも超える超高速のものが要求されており、これに伴い、電動機も高温になる。

そこで、本願出願人は、高速回転させてもセグメント磁石の保持ができるようするため、第5図に示すものを、特願平01-71010において提案した。このものは、円弧板状をなす複数のセグメント磁石C1乃至C4を、回転子軸Aの外周に固着された磁性材料製のヨークBの外周面と、放射状に実設される保持突起B1乃至B4の側面により形成されるスペース内に収容し、しかもセグメント磁石及びヨークの軸方向両外側面に、保持突起の外径に略等しいか若干小さい外径の非磁性材料製の円板D,Dを位置させることにより、セグメント磁石の軸方向の位置規制をした状態で樹脂成形を行い、その結果、円板Dの軸方向外側面と、これに連続した外周面及びセグメント磁石と保持突起との隙間に、熱硬化性樹脂の成形樹脂層Eを形成したものである。なお、磁性材料製ヨークBには、複数（この例では4個）の貫通孔Bdがあり、また円板Dには、それに対応した貫通孔Ddがそれぞれ設けてあり、これらの孔内にも上記した成形樹脂層Eが連続的に形成されている。

[考案が解決しようとする課題]

上記した永久磁石回転子は、第6図に示すような成形金型により樹脂成形する。図において、Lは下金型、UはゲートGを有する上金型である。ゲートGから注入された溶融樹脂は、円板D及びヨークBにそれぞれ設けられた貫通孔Dd,Bdを通る流れy1と、金型L,Uとセグメント磁石の隙間を通る流れy2に別れ、さらに流れy2はセグメント磁石と保持突起間の隙間にも流れる。そして、最終的にはこれらを充填して成形樹脂層Eを形成する。各セグメント磁石は、この成形時における樹脂の圧力によりヨークの外周面Baに押しつけられ、バランスよく所望位置に位置することとなる。

ところで円板Dは、製造の簡易化のため、熱可塑性樹脂（例えばガラス繊維入りポリアミド樹脂等）を用いて成型する場合が多い。そして円板Dは、成形樹脂層Eを形成するために、ゲートGから所要成形圧力でもって注入される溶融樹脂を直接的に受け止めることとなる。このとき、溶融樹脂が固化する前に円板Dが変形することがあり、その場合には、セグメント磁石の軸方向の位置規制ができなくなってしまうのである。

本考案は、かかる事由に鑑みてなしたもので、その目的とするところは、樹脂成形工程において、セグメント

磁石の軸方向の位置規制が確実に行われ得る永久磁石回転子を提供するにある。

[課題を解決するための手段]

かかる課題を解決するために、本考案の永久磁石回転子は、回転子軸と、セグメント磁石と、磁性材料製のヨークと、非磁性材料製の円板と、円板の軸方向外側面と、これに連続した外周面及びセグメント磁石とヨークの保持突起との隙間と、ヨーク及び円板の連通する貫通孔とに、熱硬化性樹脂の成形樹脂層を形成してなるものであって、前記円板及び成形樹脂層に、円板の貫通孔に重ならず、かつセグメント磁石及びヨークの端面に重なる位置に、金型突部が進入してセグメント磁石の位置規制をするものであって円板から成形樹脂層に連通する複数の挿通孔を設けた構成にしてある。

[作用]

本考案によれば、円板に、金型突部のための複数の挿通孔を形成したので、成形金型にセグメント磁石及びヨークの端面に当接する金型突部を設け、これによりセグメント磁石の軸方向の位置規制をするようにして樹脂成形が行える。その結果、成形樹脂層にも円板の挿通孔に連通する複数の挿通孔が形成できて、この挿通孔をバランスシング部材の取着部として利用できるようになる。

[実施例]

以下、本考案の一実施例を第1図乃至第3図に基づいて説明する。

この永久磁石回転子1は、回転子軸2、ヨーク3、複数（本実施例では4個）のセグメント磁石4a乃至4d、非磁性材料製の円板5,5及び熱硬化性樹脂の成形樹脂層6とから構成される。

ヨーク3は、珪素鋼板のような磁性材料を打ち抜き形成的した素片3a,3a,…が積層されてなるもので、基本形状は円筒状をなしている。この積層厚は、後述のセグメント磁石4a乃至4dの軸方向長さと略同等とする。さらにこのヨーク3の外周面3bには、セグメント磁石と同数で、その径方向厚さに略等しい高さの保持突起3c,3c,…が放射状に連設されている。この保持突起3c,3c,…は、径方向高さの中間付近から先端にかけて幅広になっている。従って、外周面3bと保持突起3c,3c,…の側面とにより、大略円弧状のスペースが形成される。3d,3d,…は成形用及び成形樹脂層形成用の貫通孔である。

セグメント磁石4a乃至4dは、ヨーク3のスペースに収容されるべく、これに若干小さく対応した円弧状板となっている。従って、周方向両端の外周側は、保持突起の幅広形状に対応する部分が切除された形状となる。

非磁性材料製の円板5,5は、例えばガラス30%入りポリアミド樹脂のような熱可塑性樹脂により型造られるものであって、保持突起3cの外径に略等しいか若干小さい外径の大略円板状に形成される。5d,5d,…は成形用及び成形樹脂層形成用の貫通孔で、ヨークの貫通孔3d,3dに50 対応する位置に設けてある。5eは回転子軸2が挿通する

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貫通孔である。なお、この円板5,5の形状は、後に詳述する。

成形樹脂層6は、円板5,5の軸方向外側面と、これに連続した外周面及びセグメント磁石4a乃至4dとヨークの保持突起3c,3c,…との隙間、そしてヨークの貫通孔3d,3d,…及び円板の貫通孔5d,5d,…に、熱硬化性樹脂を充填して形成される。

次に、非磁性材料製の円板5,5の形状を詳述する。この円板5,5は、成形金型に設けられる複数のゲート位置より内方に、端面5fが成形樹脂層6の軸方向側面より突出する隆起部5gが形成されており、また端面5fには、周溝5hが設けてある。さらに周溝5hを基準にした外方側の端面5iは、金型面により加圧変形され得るよう形成されている。本実施例における外方側の端面5iは、円板5,5の部品の状態では内方側の端面5jより若干突出させてあり、それが成形工程完了後には、金型により加圧変形されて内方側の端面5jと略同一平面になるようにしている。つまり外方側の端面5i,5i間の距離は、上下金型の端面5f,5f当接面間の寸法より若干大きくしてあるのである。

さらに重要な点は、この円板5,5は、その貫通孔5d,5d,…に重ならず、かつセグメント磁石4a乃至4d及びヨーク3の端面に重なる位置に、金型突部が進入してセグメント磁石の位置規制をするための複数（本実施例では8個）の挿通孔5k,5k,…が形成されていることである。

5mは薄肉円筒部で、貫通孔5d,5d,…と同軸上に、ヨーク3の貫通孔3d,3d,…に嵌合し得るように突設される。この薄肉円筒部5mは、樹脂成形前の行う予熱により熱膨張して、円板5が強固にヨーク3に固定されるようにするためのものである。5nは薄肉円筒部5mを切り欠いて形成した切除部で、熱膨張による変形量をより大きくする。

しかして永久磁石回転子1の製作は、次のようにして行う。先ず、回転子軸2にヨーク3を圧入する。次に、ヨーク3にセグメント磁石4a乃至4dを挿入してこれらの軸方向両外側面に、これを挟むように円板5,5を圧入する。次に、この状態のものを予熱した後、上型Uと下型Lに装着する。なおこの上下型U,Lには、円板5,5の挿通孔5k,5k,…に対応した位置で、かつ挿通孔5k,5k,…の内径より若干小径で、さらに円板5,5及び成形樹脂層6の厚さの和に等しい長さの突部Ut,Ltを設けておく。次に、上型Uが降下して下型Lと突き合わせられる。このとき、円板5,5の外方側の端面5i,5iが加圧変形されるとともに、両突部Ut,Ltはヨーク3とセグメント磁石4a乃

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至4dの端面に当接して、セグメント磁石4a乃至4dの軸方向の位置規制を行う。そして、上型UのゲートGから、例えば不飽和ポリエスチル樹脂のような熱硬化性樹脂を注入する。

この場合、ゲートGから注入された溶融樹脂は、円板5及びヨーク3にそれぞれ設けられた貫通孔5d,3dを通る流れz1と、金型L,Uとセグメント磁石4a乃至4d間の隙間を通る流れz2に別れ、さらに流れz2はセグメント磁石と保持突起間の隙間にも流れる。そして、最終的にはこれらを充填して、円板5の軸方向外側面と、これに連続した外周面及びセグメント磁石と保持突起間の隙間に成形樹脂層6を形成するのである。また、上型Uが上昇すると、成形樹脂層6には円板5の挿通孔5k,5k,…に連通する挿通孔6k,6k,…が形成されることとなる。

このような円板5と成形樹脂層6の挿通孔5k,5k,…6k,6k,…は、永久磁石回転子1の重量バランスをより良好にしたい場合、例えばバテのようなバランスング部材を取着する取着部として利用できる。

なお、本実施例では、円板5に隆起部5gが形成されたもので説明したが、これを形成しない従来の円板状のものでもよい。

【考案の効果】

本考案の永久磁石回転子は、上記のように構成したから、成形金型にセグメント磁石及びヨークの端面に当接する金型突部を設け、これによりセグメント磁石の軸方向の位置規制をするようにして樹脂成形が行えるので、樹脂成形工程において、セグメント磁石の軸方向の位置規制が確実に行なうことができるものとなる。

【図面の簡単な説明】

第1図は、本考案の一実施例を示す斜視図。

第2図は、その非磁性材料製の円板を示すもので、

(a)は平面図、(b)は(a)のA-A断面図、

(c)は底面図、

第3図は、成形金型に装着された状態を示す縦断面図、

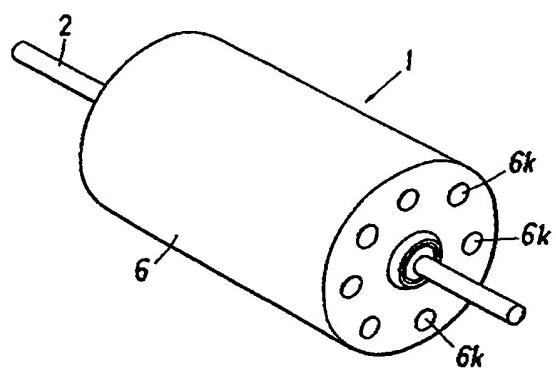
第4図は、一般例を示す斜視図、

第5図は、本願出願人が先に提案したもの部分的に切欠いた斜視図、

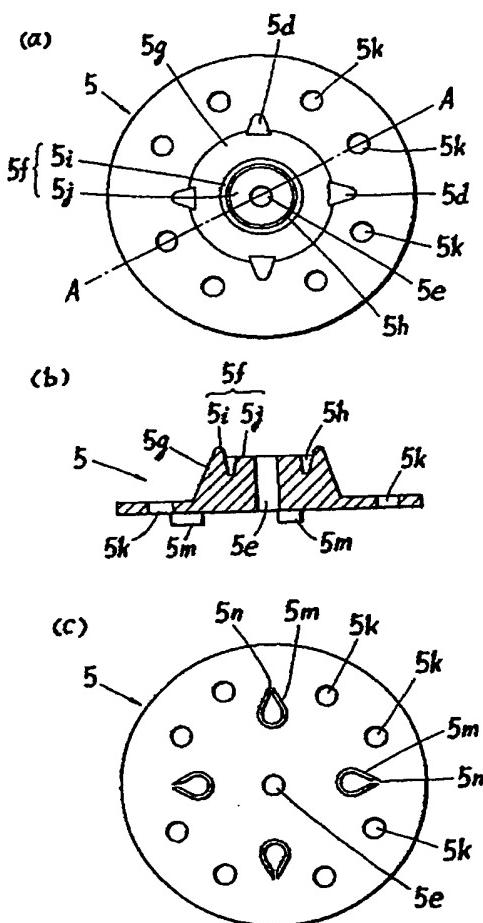
第6図は、その成形状態を説明する説明図である。

1……永久磁石回転子、2……回転子軸、3……ヨーク、3d……貫通孔、4a乃至4d……セグメント磁石、5……非磁性材料製の円板、5d……貫通孔、5k……挿通孔、6……成形樹脂層、6k……挿通孔、U……上型、Ut……金型突部、L……下型、Lt……金型突部。

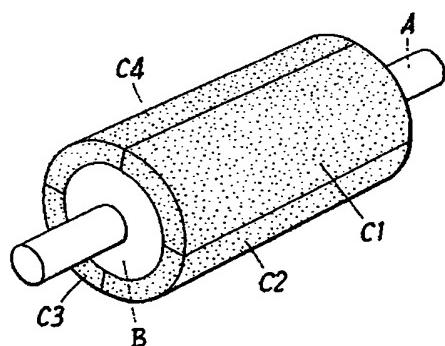
【第1図】



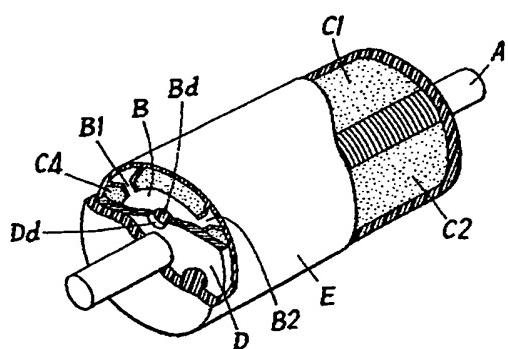
【第2図】



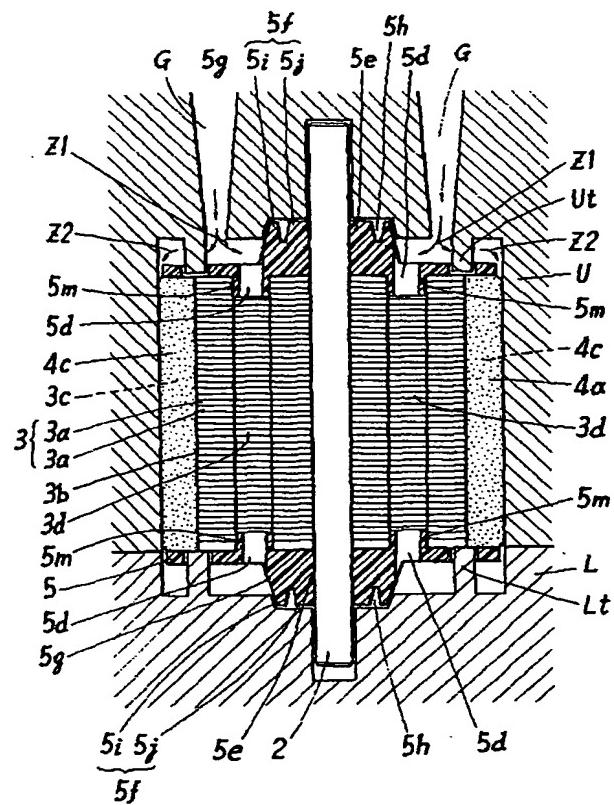
【第4図】



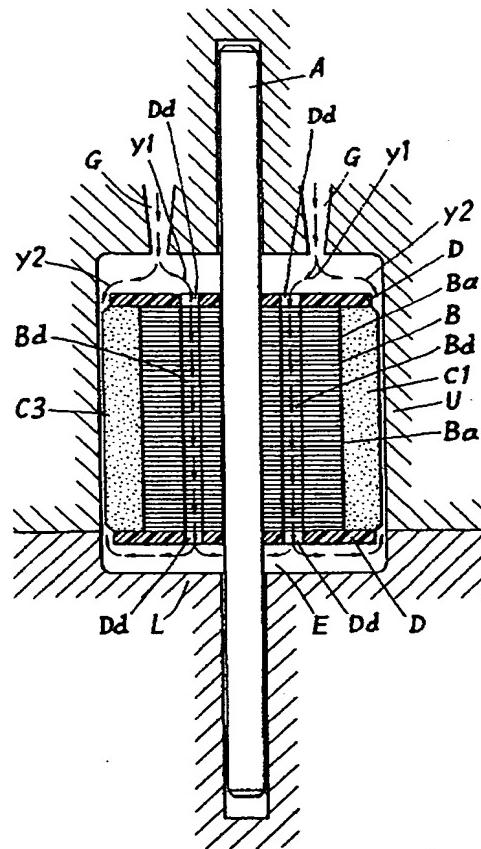
【第5図】



【第3図】



【第6図】



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